

CLAIMS

1. Method for the dynamic adjustment of roller segments (13 to 17) that support and/or guide both sides of a continuously cast strand (4) made of metal, especially steel, with at least two successive pairs of rollers (18), which are adjusted relative to each other by piston-cylinder units (19), which are acted upon with both position control and pressure control, and the pairs of rollers (18) are then adjusted to the continuously cast strand (4) by position control, and the hydraulic pressure is switched from position-controlled operation to pressure-controlled operation when the hydraulic pressure in a piston-cylinder unit (19) reaches a predetermined value, characterized by the application of the method to roller segments (13 to 17) of continuous bloom and billet casting machines (20), such that the roller segments (13 to 17) are installed in the cold bar zone, the hot bar zone, and/or the soft reduction zone and are operated by an automatic segment control system (32) and a basic automation system (33).

2. Method in accordance with Claim 1, characterized by the fact that integrated, driven rollers (23) arranged on the segment entrance side (21) and/or on the segment exit side (22) of swiveling and/or parallel-adjustable roller segments (13 to 17) are switched from position-controlled operation to pressure-controlled operation, depending on the phase of the process.

3. Continuous casting device for casting continuous bloom or billet sections, with a containment roll stand (5), which is arranged after the continuous casting mold (2), and with a bending-straightening unit (11), characterized by the fact that a device is arranged at least partially in front of the bending-straightening unit (11) or completely behind the bending-straightening unit (11), with several hydraulically operated piston-cylinder units (19) with position-controlled or pressure-controlled, adjustable roller segments (13 to 17), each of which has at least one driven roller (23).

4. Continuous casting device in accordance with Claim 3, characterized by the fact that the driven rollers (23) are installed on the segment entrance side (21) and/or on the segment exit side (22).

5. Continuous casting device in accordance with Claim 3 or Claim 4, characterized by the fact that the drive motor (31) for a driven roller (23) is arranged, together with a transfer case (30), on one side (26) of the segment frame (27) with a vertical drive shaft orientation (28).

6. Continuous casting device in accordance with any of Claims 3 to 5, characterized by the fact that the adjustment and automatic control concept (31) for the dynamic adjustment is divided into an automatic segment control system (32) and a basic automation system (33).

7. Continuous casting device in accordance with Claim 6, characterized by the fact that the automatic segment control system (32) comprises at least the given operation strategy (34, 39, 40), roll spring compensation (35), a maximum force regulator (36), a minimum force regulator (37), and a positioning system (38).

8. Continuous casting device in accordance with Claim 6, characterized by the fact that the basic automation system 33 comprises at least the given type of operation (34), a torque controller (39) and a speed controller (40).

9. Continuous casting device in accordance with any of Claims 3 to 8, characterized by the fact that two pressure sensors (41) spaced some distance apart for different piston positions and a position sensor (42) for the piston (43) of a piston-cylinder unit (19) are provided on each piston-cylinder unit (19) and are connected with the automatic segment control system (32).

10. Continuous casting device in accordance with any of Claims 3 to 9, characterized by the fact that the drive motor (29) for the driven roller (23) communicates with the basic automation system (33).

Figure 1.

KEY:

Kühlzone = cooling zone.

Figure 4.

KEY:

Segmentregelung = automatic segment control

Betriebsstrategien = operation strategies

Auffederungskompensation = roll spring compensation

Maximalkraftregler = maximum force regulator

Minimalkraftregler = minimum force regulator

Positionsregler = positioning system

Basisautomatisierung = basic automation

Betriebsart = type of operation

Momentenregler = torque controller

Drehzahlregler = speed controller

Warmstrangförderung = hot bar conveyance

Kaltstrangförderung = cold bar conveyance

Softreduktion = soft reduction